UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 73536

CSAH NO. 49

OVER THE

SAUK RIVER

DISTRICT 3 - STEARNS COUNTY

PREPARED FOR THE

MINNESOTA DEPARTMENT OF TRANSPORTATION

BY

COLLINS ENGINEERS, INC.

JOB NO. 3512 (CEI 86)

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected at Bridge No. 73536, Piers 1 and 2, were found to be in good condition with no significant structural defects observed. Minor localized scour has caused partial footing exposure at both Piers 1 and 2; however, the channel bottom appeared stable with no significant changes observed since the previous inspection.

INSPECTION FINDINGS:

(A) There was minor footing exposure encountered at both piers due to a minor amount of local scour. The footing at Pier 1 was exposed at the western corner with no vertical face detected. The footing at Pier 2 was exposed at the northern corner with up to 1 foot of vertical face exposed.

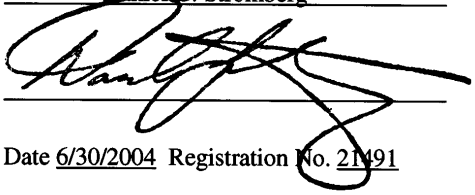
(B) The Concrete of the piers was in very good condition with no notable defects.

RECOMMENDATIONS:

(A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

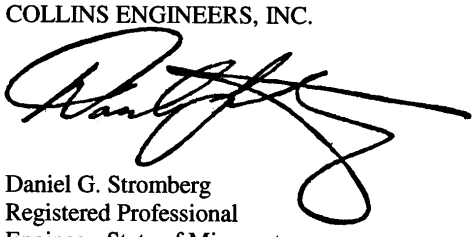
Daniel G. Stromberg



Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.



Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 73536

Feature Crossed: The Sauk River

Feature Carried: CSAH No. 49

Location: District 3 - Stearns County

Bridge Description: The bridge superstructure consists of three spans of multiple prestressed concrete beams. The superstructure is supported by two reinforced concrete abutments and two reinforced concrete piers. The piers and abutments are supported by footings with steel H-piles. The piers are numbered 1 and 2 starting from the southerly end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: September 28, 2002

Weather Conditions: Rain, "45EF

Underwater Visibility: "0.5 Feet

Waterway Velocity: Negligible/None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: The piers consist of cylindrical shafts supporting a hammerhead pier cap and are supported by square footings founded on piles.

Maximum Water Depth at Substructure Inspected: Approximately 13 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the downstream end of Pier 2.

Water Surface: The waterline was approximately 15.5 feet below reference. Waterline Elevation = 1085.05.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

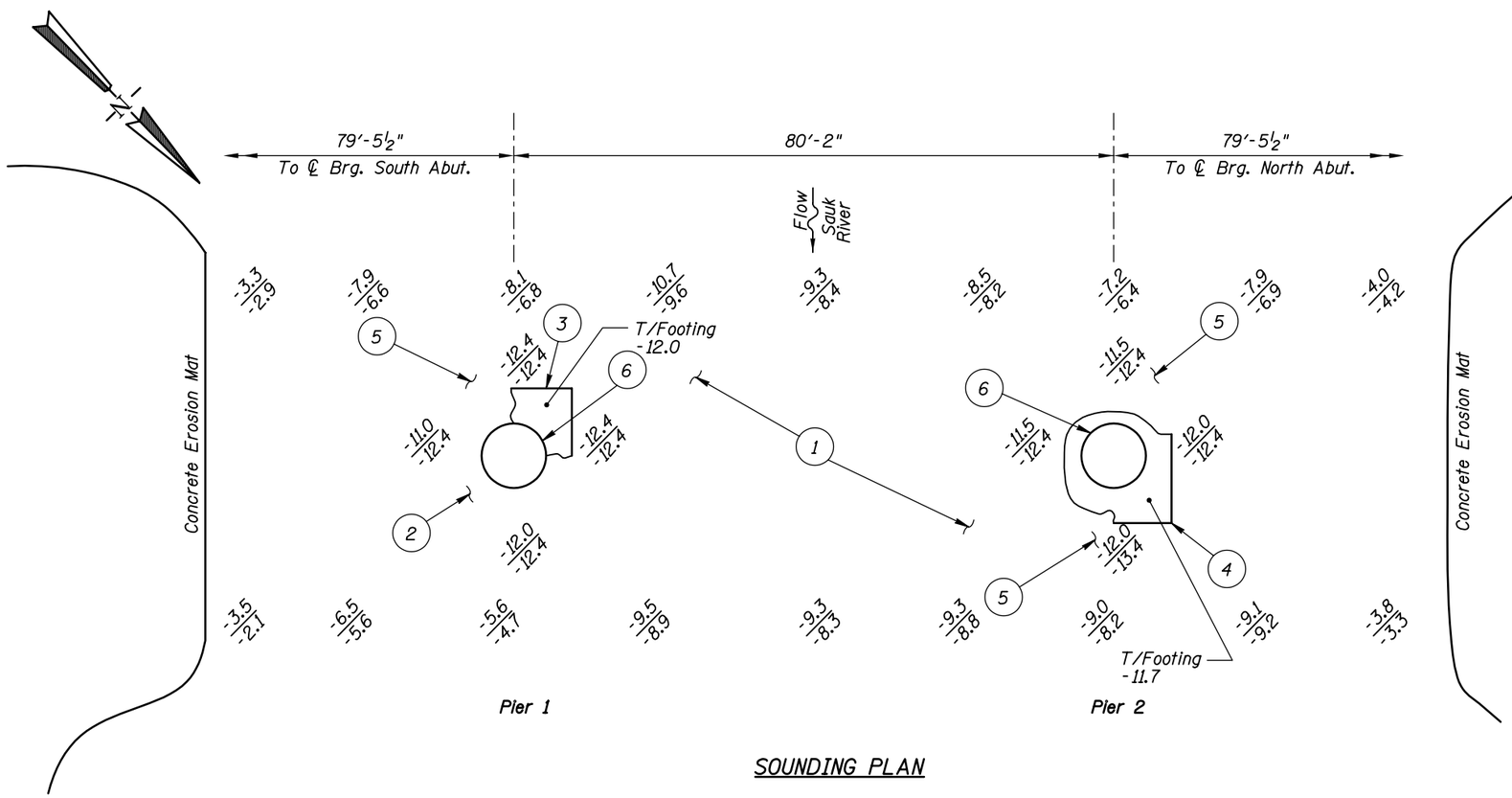
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/9/02

Item 113: Scour Critical Bridges: Code I/95

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes __X__ No



SOUNDING PLAN

GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on September 28, 2002, the waterline was located approximately 15.5 feet below the top of the pier cap at the downstream end of Pier 2. This corresponds to a waterline elevation of 1085.5 based on the previous report dated September 11, 1997.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

INSPECTION NOTES:

(1) The channel bottom consisted of sandy gravel with up to 5 inches of probe rod penetration.

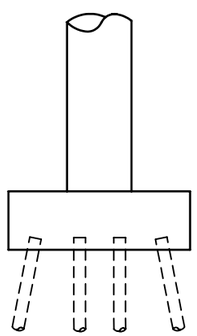
(2) The channel bottom consisted of sand with up to 8 inches of probe rod penetration.

(3) The top of footing was exposed at the western corner of Pier 1 with no vertical face exposed.

(4) The top of footing was exposed around the column and at the northern corner of Pier 2 with up to 1 foot of vertical exposure.

(5) Localized scour pockets, 4 to 5 feet deep, were observed around the pier columns.

(6) The submerged concrete was in good, sound condition with a light layer of aquatic growth observed.



TYPICAL END VIEW OF PIERS

Legend

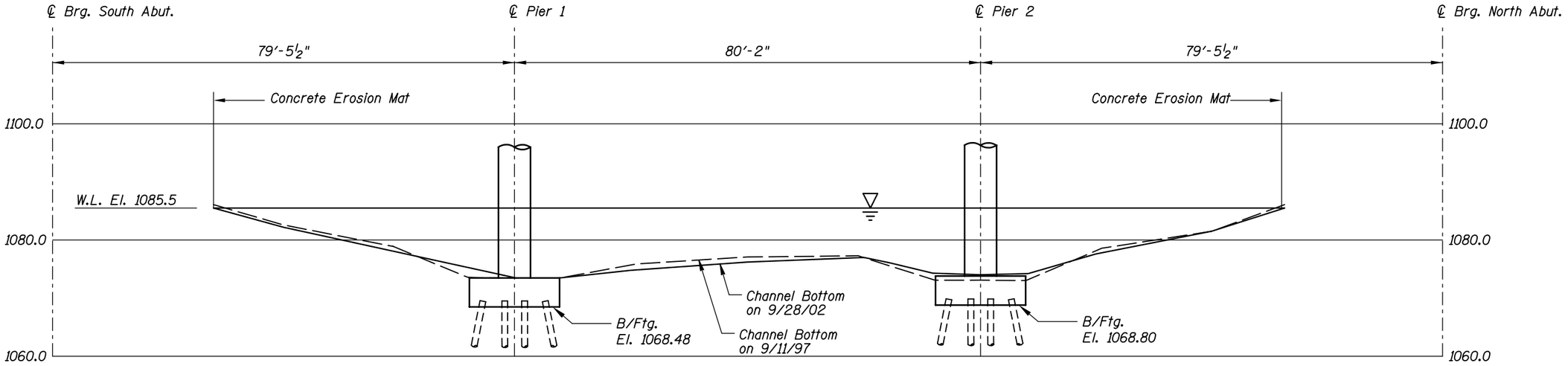
-2.0	Sounding Depth from Waterline (9/28/02)
-5.2	Sounding Depth from Waterline (9/11/97)

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

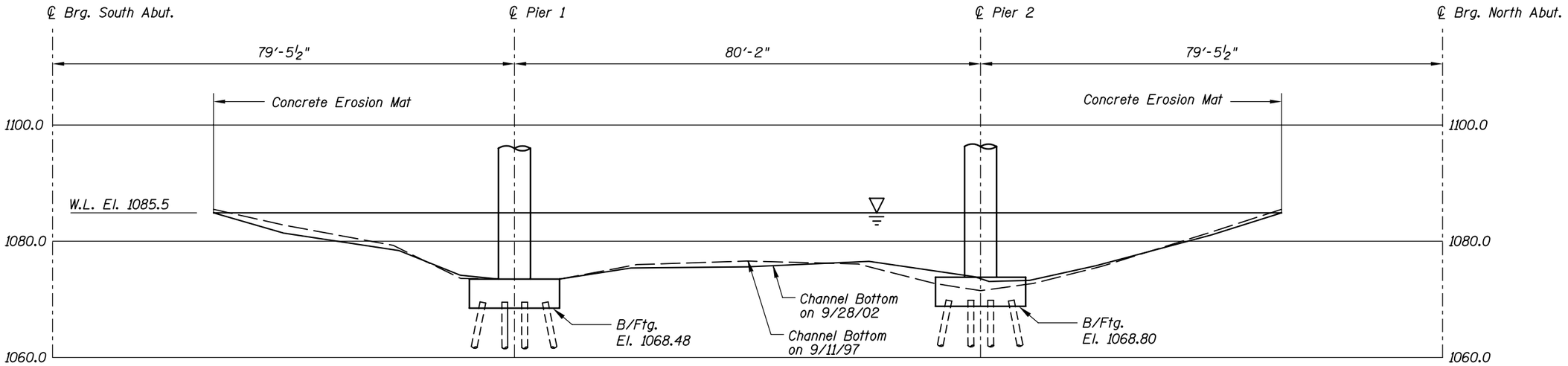
STRUCTURE NO. 73536
OVER THE SAUK RIVER
DISTRICT 3, STEARNS COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: NTS
Code: 35120086		Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:

Refer to Figure 1 for General Notes.

MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

STRUCTURE NO. 73536
OVER THE SAUK RIVER
DISTRICT 3, STEARNS COUNTY

UPSTREAM AND DOWNSTREAM FASCIA PROFILES

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: SEPT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600 CHICAGO, ILLINOIS 60606 (312) 704-9300	Scale: 1"=20'
Code: 35120086		Figure No.: 2

Photograph 1. Overall View of the Structure, Looking Northwest.

Photograph 2. View of Pier 1, Looking Northwest.

Photograph 3. View of Pier 2, Looking Northwest.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: September 28, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 73536 WEATHER: Rain, "45EF
WATERWAY CROSSED: The Sauk River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER
PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins
EQUIPMENT: Scuba, Scraper, Lead Line, Sounding Pole, Camera, U/W Light, Probe Rod
TIME IN WATER: 1:00 p.m.
TIME OUT OF WATER: 1:30 p.m.
WATERWAY DATA: VELOCITY Negligible/None
VISIBILITY " 0.5 Feet
DEPTH 14 Feet
ELEMENTS INSPECTED: Piers 1 and 2
REMARKS: Overall, the submerged concrete was in good condition with no structurally significant defects observed. Localized scour pockets, 4 to 5 feet deep, around both piers resulted in partial footing exposure. The top of footing at the western corner of Pier 1 was exposed with no vertical face detected, and the top of footing at the northern corner of Pier 2 was also exposed with up to 1 foot of vertical exposure.

FURTHER ACTION NEEDED: _____ YES ____X___ NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 73536
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Sauk River

INSPECTION DATE September 28, 2002

NOTE: USE ALL APPLICABLE CONDITION DEFINITIONS AS DEFINED IN THE MINNESOTA RECORDING AND CODING GUIDE INCLUDING GENERAL, SUBSTRUCTURE, CHANNEL AND PROTECTION, AND CULVERTS AND WALL DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

			SUBSTRUCTURE						CHANNEL					GENERAL					
UNIT REFERENCE NO.		MAXIMUM DEPTH OF WATER	PILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
	UNIT DESCRIPTION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	12.4’	N	8	8	9	N	8	7	N	N	N	7	8	N	N	N	N	N
	Pier 2	13.0’	N	8	8	9	N	8	7	N	N	N	7	8	N	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged concrete was in good condition with no structurally significant defects observed. Localized scour pockets, 4 to 5 feet deep, around both piers resulted in partial footing exposure. The top of footing at the western corner of Pier 1 was exposed with no vertical face detected, and the top of footing at the northern corner of Pier 2 was also exposed with up to 1 foot of vertical exposure.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.